



# Solid Copy

*The International CWops Newsletter*

December

2011

Issue No. 23



## **CWops "CWT"**

**10, 14, 28 December 2011**

Start time:

1300Z Asia/VK/ZL region

1900Z Europe Region

0300Z (11, 15, 29 Dec.) NA region

1-hour each region

Exchange name/number (members)

Exchange name/SPC (non-members)

## **CWops "ragchew bash"**

Immediately following each CWT at 1400Z, 2000Z and 0400Z

## **CWops "neighborhood"**

Look for CWops on 1.818, 3.528, 7.028, 10.118, 14.028, 18.078, 21.028, 24.908, 28.028, 50.098

## **CWops Officers and Director**

### **Officers**

President: Pete Chamalian, [W1RM](#)

Vice President: Art Suberbille, [KZ5D](#)

Secretary: Jim Talens, [N3JT](#)

Treasurer: Craig Thompson, [K9CT](#)

### **Directors:**

Bert Donn, [G3XSN](#)

Vidi La Grange, [ZS1EL](#)

**Webmaster:** John Miller, [K6MM](#)

**Editor/Publisher:** Rob Brownstein, [K6RB](#)



**From the president...**

### **A Milestone Has Been Reached...**

Early in November, N4DD became CWops member 1000! This is quite a milestone for an organization that only started in 2010.

CWops will continue to grow and do well with the support of each and every member by being active and seeking qualified CW operators to join us. Thanks to everyone for making this club as vibrant and strong as it has become!

### **ARRL Rookie Roundup -- CW**

Mark your calendar and be sure to get on for the ARRL Rookie Roundup on Sunday December 18 from 1800z to 2359z. Look for rookies sending CQ RR and give them a contact. You can call CQ R which indicates that you are looking to work a rookie.

Full details can be found at:

<http://www.arrl.org/rookie-roundup>

This is a great chance to support more CW operating so take a break from your holiday chores and get on the bands! Remember, the rookie you work today could be the CWops member of tomorrow.

CW Academy advisors should make special mention of this event to their students and encourage them to get on. The roundup is a great place to practice, learn some operating techniques and have some fun. I would also encourage members to host a rookie and offer encouragement.

## QTX

Don't forget to post your QTX (ragchew) information here:

<http://www.cwops.org/members/qtx.html>

## CW Open Results

Elsewhere in this issue you will find the complete results of the inaugural CW Open held last August. A special thanks to Alan, AD6E, and the rest of the crew involved with scheduling and running this event. Trophies will be mailed to the winners by the end of November.

## Elections

Please join me in welcoming Art, KZ5D, VP.

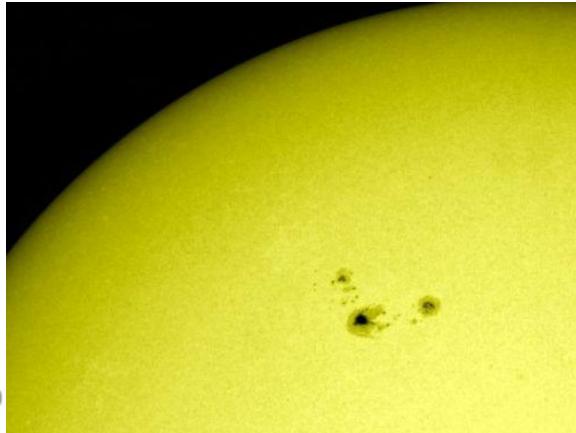
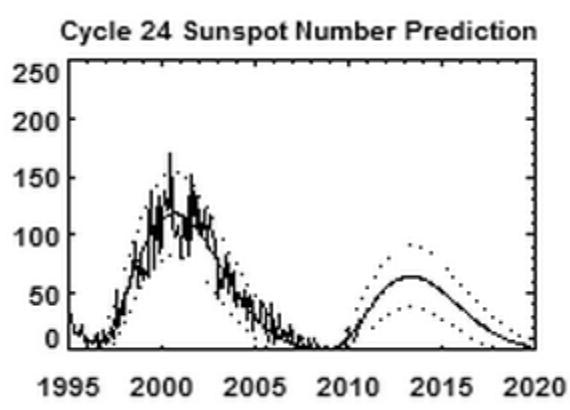
## Holiday Wishes

I hope you and your family have a wonderful holiday season and a super New Year.

73,

*Pete, W1RM*

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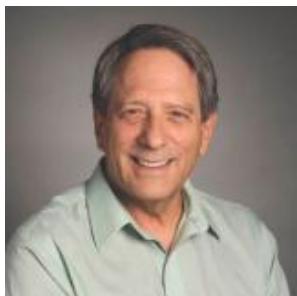


## ACA/CMA Report

*Art*, KZ5D

CALL	ACA	CMA		
N5RR*	571	2006	W5ZR	246
SM6CNN*	480	1628	KR3E*	243
N5AW	462	1163	AD1C	239
W1RM*	451	1593	NN6T*	230
KZ5D*	447	1770	W2LK	209
VE3KI*	405	1050	V31JP	200
EA8AY*	395	1028	W5ASP	186
EA8OM*	383	1150	N3WT*	180
N2UU*	380	1045	OK1RR*	176
K6RB*	374	1207	W4PM	173
W6KY*	365	1067	N1ZX	172
W4AU	349	712	K6DGW*	150
DJ1OJ	337	1019	W6RKC	148
EA1WX*	330	916	VU2PTT	123
K2VCO	322	536	W4BQF	106
DL8PG*	315	563	N5TM	90
N3JT	295	920	K4GM	84
W1UU*	289	763	KC0VKN	77
W1UJ	284	1150	N3AM	63
			HB9CVQ	479

## From the editor



There are so many good things happening. We finished scoring the CW OPEN sooner than we expected, and the results are right here in Solid Copy. The club's membership has grown from the original 15 to over 1,000 in under two years! Participation in CWT is holding steady or growing modestly. The higher HF bands are productive. And, more people are signing up for CW Academy.

One of my other ham-radio pastimes has been restoring 1950s vintage gear and putting them back on the air. At one time, for example, I had six stations (Valiant/NC-303; Ranger/HQ-170; Adventurer/HQ-110; Eico 720/730/722 with Drake 2B/2BQ; an S-Line including a 30L-1; and a Globe King 500/75A-4). All six stations were set up in the same room on two adjoining desks and by using rotary switches, I could share the antenna system among them.

But, I learned something really quickly. The CW "standards" of the 1950s had changed with the advent of transceivers. When most of us were using separate TX and RX, we didn't worry much about frequency drift. You would follow the other guy with your RX and he would follow you with his. You may have started out on, say, 21.120 MHz and by the time you finished a half-hour later, you were on 21.122 and he was on 21.119, and unless you were monitoring your signal with your RX, you had no clue.

With transceivers, everything changed, especially when using a narrow filter. Drift could quickly float you right out of the passband. So, despite having these really nice vintage stations, I never operated CW above 40 meters. That has been true from around 1992 right up to last weekend. Then, I did something I had been thinking about for years. I built a stable VFO. And, now, I can operate that ol' Globe King on all the bands it covers and not be embarrassed by drift. If you've ever considered buying and using one of those TXs from our newbie days (e.g. DX-20, DX-40, Globe Scout, Globe Chief, etc.) and you want to operate with it using CW, the means are at hand to do so without trepidation. Further on in this issue, I wrote an article about my solution and feel free to email me with any questions.

With regard to the expanded bands on CWT, I think it's safe to say that it has improved things. When there are a lot of participants, it is moot because we all tend to stay on one or two bands. But, when the participants number in the 30s, having additional bands to move to keeps the ball in play.

Finally, this year's CW OPEN was a success on many levels and trophies and plaques are on their way to category winners. Read the results piece written by Alan, AD6E, and plan on taking part next year – the first weekend of September, 2012.

**CW OPEN 2012: 1 September at 1200-1600Z and 2000-2400Z.; 2 September at 0400-0800Z.**

*Rob, K6RB*

# CW OPEN 2011

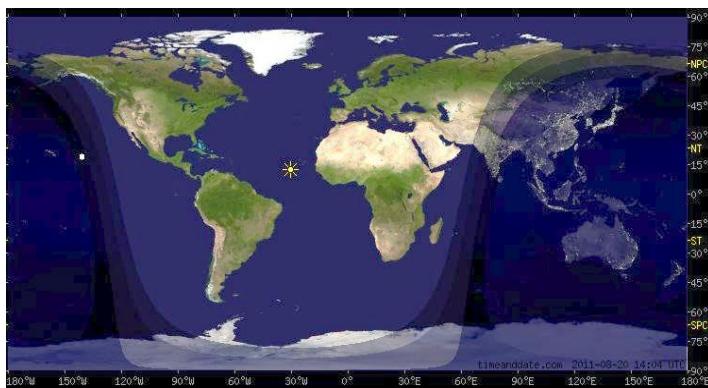
sponsored by CW OPERATORS CLUB

<http://www.cwops.org>

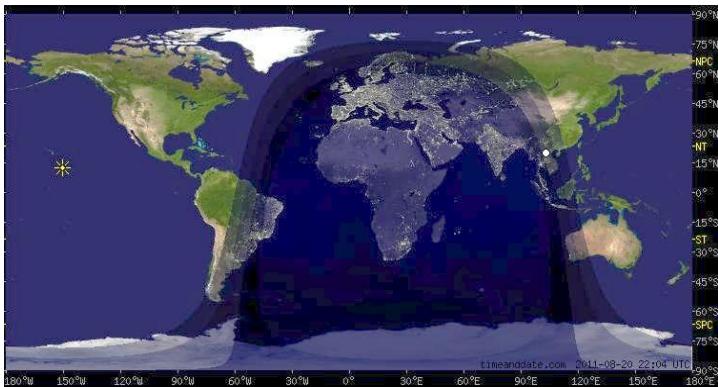
The CW Operators Club (CWops) was started a little more than a year before the first CW OPEN (CWO) competition. The club's vision was to provide a platform for various CW activities including friendly ragchewing, service, education, and competition. The competition started with bi-weekly CWT events that were one hour long spread through the day, during the mid-week. The purpose was (and still is) a way to get CW activity going in a friendly semi-competitive format. With the success of CWT, there came a desire for a more competitive version of CWT with real prizes/awards and based on serious adjudication of submitted logs. That vision has turned into the first annual CW OPEN competition on Aug 20/21 2011.

The CWO organization started with Rob, K6RB, who asked me to organize and manage the event. We pulled together a management team and began discussing timing, rules, and the like. K6MM added the CWO information to the CWops website, and we were off and running with little time to get the word out about this new event. K6RB took on the publicity job and contacted hundreds of individuals, magazines, newsletters, and more. By the time CWO was about to start, it seemed like everyone in the world knew about it, and the responses were all very positive.

Early on, we decided to stay with the CWT concept of three independent events or sessions. But, instead of one hour each, they would be four hours each and separated by four hours of time to allow for significant propagation change. The idea is that each IARU region should have one good session for the low bands, one good session for the high bands, and one not-so-good session. A little for everyone. You have your choice which session(s) to enter.



Session 1 gave sunlight over most of NA, SA, AF, and EU, and night time conditions for AS and OC. There was excellent propagation from Asia to NA at the start on the low bands, and good propagation between SA, NA and EU as NA was in early morning while EU enjoyed late afternoon.



Session 2 had sunlight on NA, OC, and AS while AF and EU were in darkness. SA enjoyed gray-line propagation with AS as the sun set on SA and rose in AS.



Session 3 had daylight in EU, AS, and AF while NA, SA and much of OC were in darkness.

Three very different propagation challenges!

These maps show day/night in the middle of each session. So, while propagation can, and did, change during any sessions, it was reasonably constant compared to session-to-session changes.

#### General note on the result listings

See <http://www.cwops.org/cwopen.html>

The tabularized results show the number of QSOs, multipliers, and final score after log checking. They are sorted by power level (HIGH, LOW, or QRP). In addition, each entry shows whether the operator claimed he/she used some sort of spotting assistance (e.g. packet or skimmer is denoted by -A). Note that this extra information is simply that which is provided in the log header. There is no real way to verify this information. Should there be an error, please let us know and we can change it on the website listings. We recognize that many hams should, but do not, look at their Cabrillo logs before sending them in. Thus, some information may be simply the default value, or missing altogether.

## Session 1 Results

As you can see from the high power “top 10” scores below, Session 1 was a NA feeding frenzy. Larry, K5OT, operating from the K5TR “superstation” edged out Ken, K6LA, operating from VY2TT. Andy, AE6Y rounded out the top three.

### 2011 CWO Session 1 Final

Station	QSOs	Mults	Score	Power
K5OT @K5TR	307	180	55260	HIGH
VY2TT op K6LA	275	190	52250	HIGH
AE6Y	294	174	51156	HIGH
AA3B	289	168	48552	HIGH
N4AF	282	169	47658	HIGH
W0YK	274	170	46580	HIGH
K6RB	270	164	44280	HIGH
N4ZZ	257	172	44204	HIGH
N8AA	266	166	44156	HIGH
K0RF	252	175	44100	HIGH

It's interesting to note that the top score had the highest QSO count by a significant margin, although trailing in multipliers. This may be because Ken spent most of his time on 20 meters, jumping to 40 and 15 to catch more points on his second radio, but concentrating on 20 where new contacts were guaranteed to be new multipliers. Larry, on the other hand,

spent considerable time on 40 meters at the beginning before moving to 20 after the first hour, then 15 after the second hour. Thus, Larry was able to log significantly more QSOs yet didn't really suffer very much from lack of multipliers.

Station	QSOs	Mults	Score	Power
N5AW	242	154	37268	LOW
K0AD	216	146	31536	LOW
K9CT	225	137	30825	LOW
W1RM	206	137	28222	LOW
W0UA	182	128	23296	LOW

There were 82 low power entrants for Session 1 led by Marv, N5AW, from Texas. Here are the top five low-power scores. Unlike the high-power results, the top low- power scores are more spread out. It's interesting to see K9CT

and W1RM both made exactly 137 multipliers. Craig, K9CT, spent more time jumping band-to-band than Pete, W1RM, who tended to concentrate on a particular band rather than doing a lot of band jumping. As seen with the high-power stations, band jumping tends to produce more QSOs, but not necessarily more multipliers.

Station	QSOs	Mults	Score	Power
W6JTI	139	91	12649	QRP
N2WN	124	86	10664	QRP
OK1DIG	108	89	9612	QRP

There were only seven QRP entries. Frank, W6JTI, walked away with this impressive win from northern California.

Both Frank and Jules, N2WN, operated mostly Search & Pounce, but Frank did a lot more band-to-band jumping indicative of SO2R. Meanwhile Dan, OK1DIG, did an outstanding job dodging RDA signals to find over one hundred CWO enthusiasts. We'll hear more about Dan, later.

## Session 2 Results

### 2011 CWO Session 2 Final

station	QSOs	Mults	Score	Power	
NP2X op K9VV	272	215	58480	HIGH	-A
AA3B	306	189	57834	HIGH	-A
K0RF	279	197	54963	HIGH	
K5OT @K5TR	275	196	53900	HIGH	
K5KG	268	188	50384	HIGH	-A
AE6Y	279	175	48825	HIGH	
W0YK	259	187	48433	HIGH	
N4ZZ	254	174	44196	HIGH	-A
W6OAT	235	172	40420	HIGH	-A
K0LUZ	225	175	39375	HIGH	-A

The overall winner for Session 2 is Fred (Ed), K9VV, operating NP2X from Christiansted, Virgin Islands.

Although Bud, AA3B, did a solid job with over 300 QSOs (far more than anyone else), he did a lot more band jumping to achieve that which evidently resulted in fewer multipliers.

K0RF and K5OT battled it out for third place with Chuck getting ahead with only 4 more QSOs and one more multiplier.

station	QSOs	Mults	Score	Power
K1XM	205	152	31160	LOW
WK2G	191	130	24830	LOW
K0VBU	164	136	22304	LOW
W3KB	162	129	20898	LOW
K1IMI	169	118	19942	LOW

Low power was dominated by Paul, K1XM. Second place, Merrill, WK2G, seemed to have a similar operating strategy with regard to band selection as Paul, but found 14 fewer stations and significantly fewer multipliers.

station	QSOs	Mults	Score	Power	
OK1DIG	192	144	27648	QRP	-A
N2WN	134	98	13132	QRP	
K0PC	65	54	3510	QRP	

QRP effort in Session 2 was similar to Session 1 except that Dan, OK1DIG, took advantage of better propagation to NA and clobbered all other

QRPers. Jules, N2WN, came up and improved on his excellent Session 1 performance, but it wasn't nearly enough to catch Dan this time. Third place went to Pat, K0PC.

## Session 3 Results

This should have been the time of increased activity for EU and AS. NA and SA were in the middle of their night which gave them good low-band conditions, but also the need to be up and active in the middle of the night. Unfortunately, only 17 EU logs were received for Session 3. NA activity was down considerably due to the late hour. Nothing was heard from AS, and only one station came in from OC.

### 2011 CWO Session 3 Final

Station	QSOs	Mults	Score	Power
W0YK	192	113	21696	HIGH
AE6Y	198	108	21384	HIGH
W6OAT	182	117	21294	HIGH
N6RO	193	110	21230	HIGH
K0RF	189	112	21168	HIGH
AA3B	186	112	20832	HIGH
K5KG	147	105	15435	HIGH
N4ZZ	157	98	15386	HIGH
N3AD	145	96	13920	HIGH
K2RD	157	87	13659	HIGH
K6SRZ	157	87	13659	HIGH

Ed, squeaked by Andy, AE6Y, to take the top honors for Session 3. Ed managed to find 6 more stations and 5 more multipliers than Andy.

The Session 3 competition was very tight with Rusty, W6OAT, coming in third with just 10 fewer QSOs than Ed, but with 4 more multipliers.

The highest QSO total of anyone was Ken, N6RO, but the lack of multipliers

left him in fourth place. Ken was jumping bands a lot, but it can't be determined if that caused the lower multiplier count.

Of note is the tie score of K2RD and K6SRZ for 10<sup>th</sup> place. Now that's close!

Station	QSOs	Mults	Score	Power
WK2G	99	88	8712	LOW
K1XM	88	83	7304	LOW
NE7D	100	63	6300	LOW
VE4AEO	98	59	5782	LOW
K0AD	76	56	4256	LOW

The low power competition was handily won by Merrill, WK2G, in Florida. Paul, K1XM, was well back with 11 fewer QSOs and 5 fewer multipliers. Third place finisher Rock, NE7D, actually had the most QSOs, but was well back with only 63 multipliers.

Station	QSOs	Mults	Score	Power	-A
OK1DIG	50	50	2500	QRP	
W0EA	47	41	1927	QRP	
K0PC	33	31	1023	QRP	

Once again, Dan, OK1DIG, found 50 stations with a log that was only 40 meters. No band changes at all. As a result, he also had 50 multipliers.

Tom, W0EA, and Pat, K0PC, rounded out the QRP entrants. Only four QRP logs were received.

### Combined Results

There were 130 stations that submitted logs for more than one Session, thus entering them into the Combined Competition. The Combined score is the simple sum of Session 1, Session 2, and Session 3. If someone did not enter one session, that works, but obviously it is a disadvantage to entering all three.

Note that the power level of the Combined is the highest power claimed in any of the individual sessions. Thus, if someone entered as LOW in Session 1 and HIGH in Session 2, their Combined power is HIGH.

<b>2011 CWO Combined Final</b>					
Station	Session 1	Session 2	Session 3	Total Score	Power
AA3B	48552	57834	20832	127218	HIGH
AE6Y	51156	48825	21384	121365	HIGH
K0RF	44100	54963	21168	120231	HIGH
W0YK	46580	48433	21696	116709	HIGH
K5OT	55260	53900		109160	HIGH
K5KG	38775	50384	15435	104594	HIGH
N4ZZ	44204	44196	15386	103786	HIGH
W6OAT	39680	40420	21294	101394	HIGH
K6RB	44280	37260	10660	92200	HIGH
N8AA	44156	39208		83364	HIGH

Bud, AA3B did not make the top score in any of the three sessions, but when combined together, he had the top score in the Combined. Andy, AE6Y, combined a 3<sup>rd</sup>, 6<sup>th</sup>, and 2<sup>nd</sup> place finish in the individual events to come out second.

Chuck, K0RF, had a great Session 2 to bring up his total for a third place finish. K5OT went to bed and never competed in Session 3, but with such great scores in Sessions 1 and 2 his total was good enough for a fifth place Combined finish.

Station	Session 1	Session 2	Session 3	Total Score	Power
N5AW	37268	10379	2320	49967	LOW
K9CT	30825	16380		47205	LOW
K0AD	31536	9506	4256	45298	LOW
K1IMI	22448	19942		42390	LOW
VE4AEO	15582	19344	5782	40708	LOW

In the low power category, Marv, N5AW capitalized his big Session 1 win with a 14<sup>th</sup> place finish in Session 2 and a 12<sup>th</sup> place finish in Session 3 for First place in the low power Combined competition.

Craig, K9CT, combined a 3<sup>rd</sup> place in Session 1 and 7<sup>th</sup> place in Session 2 with a 2<sup>nd</sup> place Combined. Imagine if he had not gone to bed and worked Session 3! Of course the reason for this success was that some of the other really good low power scores worked in only one Session and therefore did not compete for the Combined award.

Station	Session 1	Session 2	Session 3	Total Score	Power
OK1DIG	9612	27648	2500	39760	QRP
N2WN	10664	13132		23796	QRP
W0EA	5824	3120	1927	10871	QRP

In QRP, Dan, OK1DIG, combined his Session 2 and Session 3 wins with a strong Session 1 to win the Combined competition. Jules, N2WN, combined two 2<sup>nd</sup> place finishes to finish the Combined ... in 2<sup>nd</sup> place. In this case, he was far enough behind Dan that even if he had done well in Session 3, it probably wouldn't have been enough to catch him.

## Team Results

Ten teams competed for the Team Honors. Teams could be organized by anyone, anywhere. They do not need to be clubs, although they can be organized from within a club. For example, the Northern California Contest Club organized three separate teams just from their own members. We thank Andy, AE6Y for that exceptional organizational effort from NCCC. Other clubs organizing club teams were the Central Texas DX & Contest Club, Society of Midwest Contesters, and Yankee Clipper Contest Club.

NCCC #1	758217
A Team	437821
Solar Fluxers	389894
CTDXCC West	231765
NCCC #2	222451
CTDXCC East	146620
SMC #1	108109
YCCC #1	88324
NCCC #3	49776
Colorado Miners	15660
PCH	13494

NCCC team #1 easily walked away with the high team score with 9 members of the team giving scores to their team. The A Team, in second place had seven team members which included both EU and NA entries. Third place, Solar Fluxers, also had seven team members scattered across USA, Canada, Caribbean, and Europe.

The only team to completely fill up the 10 member maximum roster was NCCC#2. It may be that some team

scores suffered because team Captains (the team organizer) failed to follow up and make sure all of their team members sent in their logs. Live and learn, but in future CWOs. The Team competition will be tougher and every score counts.

## Assistance

I applaud everyone who voluntarily gave their “assisted” status. The high number of assisted stations makes me think that generally we have an honest group of competitors, here. The use of assistance (packet or skimmer) is controversial and the practice is outlawed for almost all contests for single operators. In the CW OPEN, we thought that such assistance would probably not be a serious advantage for anyone given the unusual multiplier rule. Finding a “rare” mult in CWO is not the same game as finding a rare mult in a DX contest. Therefore we wanted to try allowing assistance for the initial CWO. The results are open for all to see.

The results show assistance with the -A designator. It seems pretty obvious based on who did and who didn't use some form of assistance that such assistance was not a big help. Personally, I used assistance just to see if it would be of any help at all. I connected to a local packet cluster via Telnet. I think I made only two or three QSOs based on that assistance. Bud, AA3B, used his own skimmer tool and thinks it was a help near the end of the session when rate slowed down and new stations became harder to find.

Does it really help to “win”? Maybe. Maybe not. Note that most of the session and power winners were not using assistance. However, it seems obvious that packet or skimmer could bump your score up a notch or two if the competition is close.

It was not our purpose to re-start a debate that has been ongoing for years. Rather, it was an attempt to try something different and see how it works. Should future CWOs allow assistance? Let us know your thoughts.

Almost everyone in the top 10 high-power group was using SO2R technology, as were many others. As a personal note, I used SO1R and barely missed the top 10 winding up in 11<sup>th</sup> place for Session 1. Did the lack of SO2R make my score suffer? That's difficult to say. To some degree, yes; but it certainly wouldn't have put me much higher in this list. I hope that next year we can collect SO2R information similar to what we did this year for "assisted". I think seeing how you compare to your competitors with regard to SO2R vs SO1R would be a good thing.

## **Log Checking**

CWO is a new contest, and there is zero history to rely on for "how do we do this?" The purpose of CWO, as mentioned above, is to provide a serious competition based on the popular CWT events within the CW Operators Club organization. That means competitors MUST send in their logs and those logs must be checked for accuracy and scoring issues. Every log received was checked by computer to cross check each and every QSO. If the "other" log was available, all parts of the QSO were checked. If a QSO was uncheckable because the other log was not available, then some parts could still be checked by recognizing that others who worked the same station had similar (in most cases exact) reported exchange information. In fact, by looking at the logs received, it is possible to create a missing log (a virtual log) simply by extracting all the QSOs in all logs with that particular station, then sorting on serial number. Using that idea, errors in NR or NAME became obvious and scores were adjusted as necessary.

Is this process perfect? Hardly, but enough effort was put into this judging process that we have a very good feeling that the results have been adjudicated effectively and responsibly.

All log checks resulted in a RPT (report) file detailing each and every deduction. If you would like to receive your RPT file, let us know with an email to [CWO@cwops.org](mailto:CWO@cwops.org)

## **Thank You**

We owe our thanks to the CW Operators Club for sponsoring this event, the CWO management team, and especially to Rob, K6RB, for arm-twisting and cajoling as needed to make this event happen.

We also thank Icom America for stepping up and sponsoring all of the plaques and trophies awarded to the CW Open winners noted above. The top score in each Session, and in the Combined will receive a very nice trophy. The top score in each power category within each Session will receive a handsome plaque.

And, we also thank all the participants who got into the fun and made this inaugural CW Open a success. We look forward to the next one.

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## Breathing Life Back Into a Vintage CW Station

*Something Old; Something New*

By: Rob Brownstein, K6RB

Back in 1992 my wife was pregnant with my son, Mitchell, and I knew that soon my daytime operating was going to be on hold...for years! I needed something else to keep me tied to ham radio, so I decided to indulge a nostalgic whim and bought a basket-case Viking Valiant.

The idea was to get the Valiant back in operating condition and operate CW at night while my future son was sleeping. So, I reacquainted myself with tube-type equipment, and pushed head on into getting the Valiant to start playing, again.

Well, it took me about four months to get the Valiant back up and running to spec. That included getting the plate modulation section working, too. So, I put it on the air and used the IC-761's receiver as the receiver. Low and behold, it worked...sort of. On AM, it was great. I had modified the modulator to get rid of the voice-band restrictions and had a nice, flat, response from about 300 to 4,000 Hz. But, on CW, despite adjusting the differential keying to avoid chirp, I had the problem of drift for at least the first hour of operation.

In fact, every one of my later vintage transmitter/VFO combinations had a drift problem. Drift was just endemic to tube-type VFOs. The heat caused the variable capacitor plates to move apart, and the frequency would increase or decrease commensurately. Once some sort of thermal equilibrium was achieved, the drifting slowed down, but, in my experience, it never completely stopped. This was not a problem on AM, but it was a big problem on CW, especially on the higher bands where the drift on 7 MHz was multiplied two, three or four times.

So, over the years, I used my vintage gear either on 160, 80, or 40 CW; and on 75 and 10 meter AM. I dared not operate on CW on 20, 15 or 10 because in a matter of minutes I could easily drift right out of someone's filter pass band.

Then, last June, I read an article in QST by one of our members, Joe, N4YG. It described a direct-digital synthesis (DDS) VFO that he designed for replacing the VFO in a Heathkit transceiver. I saved that issue with the thought of going back to it and seeing if this might just be the answer to my drift dilemma.

### A Really Nice Design

Joe's design held a lot of appeal for me. It used a microcontroller and DDS IC to produce the frequencies required. For the Heathkit, it offered 5.0 to 5.5 MHz. But for rigs like my Globe King 500 and most 1950s CW transmitters, it offered the 1.8-2.0, 3.5-4.0, 7.0-7.3 MHz ranges. The DDS

chip used a 50 MHz clock that was crystal controlled and very stable. So, with a divided down frequency of, say, 5 MHz, the stability was even 10 times better. The microcontroller used a 20 MHz clock, also crystal controlled. And, the very nice looking analog RF output waveform was routed through an op amp to produce enough heft to drive a Globe King 500's 6V6 oscillator or any other oscillator tube in a Viking Adventurer, Viking Ranger, DX-40, DX-60, Globe Scout, Globe Chief, or what have you.

### **A Quick Email and a Quick Response**

The QST article (see QST, June 2011) listed Joe's email and a comprehensive parts list, so I emailed him to find out if he offered just the empty PC board or a fully loaded one. The answer was "yes." If you visit his Website at [www.n4yg.com](http://www.n4yg.com) you'll find that he has several different options. I chose the fully loaded board configured for a stand-alone VFO, and he sent it back to me within days.

I also ordered an LCD display from Mouser, which was received right around the same time. My junk box provided the 12 v AC transformer, fuse holder, fuse, knobs, and switches, so all I had to buy was a small aluminum BUD box to house it in. That weekend, I measured twice, cut once, and drilled/nibbled out the BUD box.

### **A Couple of Hours of Assembly**

Once the box was ready, I started mounting all the pieces including the 3 inch-by-3 inch DDS VFO PC board. Probably the longest procedure involved stripping and soldering the 16 leads of the ribbon cable that connects to the LCD display. When all was said and done, I made sure there were no major shorts in the AC line, and that all the switches were connected to the right places on the board, and fired it up.

The LCD display's back lighting came up but there was no display. A few emails back and forth with Joe pointed me in the direction of a short or open in the ribbon cable. And, sure enough, there was the tiniest solder bridge across display pins 7 and 8. With that eliminated, the unit came to life. I checked the output on a frequency counter, and it was right on the money. Then, I scoped the output while varying the output-level control. Again, everything looked good.

### **The Acid Test**

With the VFO appearing to operate as designed, I hooked it up to the Globe King 500, turned on the 75A-4, put both units on 40 meters, tuned up the Globe King (it was putting out 375 watts according to my Bird wattmeter), and I looked for someone calling CQ.

It didn't take long to find one. Right on about 7.020 MHz I heard K1NVY. I pressed the spot button and turned the encoder dial, and, viola, I heard my signal zero beat right on him. When he signed, I called him once and gave my call once. He came back and we had a nice ragchew QSO.

I mentioned I was using a Globe King 500 and he said that was probably the first Globe King he'd worked in 50 years. Moreover, he said my signal was amazingly stable and clean.

### **But, what about 20, 15 and 10 CW?**

A few days after the 40 meter proof, it was daytime, 20 meters was hopping, and I decided it was time to prove it out on 14 MHz. So, I started the process of "moving" the Globe King to 20 meters. There was a time, by the way, when doing this required opening the top of the Globe King (the 400), unplugging one set of coils and plugging in a new set of coils. But, WRL modernized that transmitter with band switching. However, there are TWO band switches on the Globe King 500 – one for the oscillator section; one for the final. You have to always remember to switch both of them!

And, I did remember. That wasn't the problem. The problem was I could not dip the 6V6 oscillator nor drive the 6146 buffer. I tried 15 and 10 meters with the same result. Not enough oomph or something.

So, being a curious sort, I went out to the garage workshop, unplugged the scope, and brought it into the ham radio room. I measured the RF voltage at the VFO socket with oscillator on and keyed. It was 10 volts. I disconnected the new VFO and connected the original Globe 755 drift meister. The oscillator dipped, the buffer looked good, and I was measuring 25 volts of RF at the VFO socket.

I concluded that 10 volts of RF was enough to drive the Globe King on 40, but not enough for doubling, tripling and quadrupling on 20, 15 and 10. So, what to do? The circuit for the Globe 755 has a 6AU6 variable-frequency oscillator section driving a 6CB6 buffer. On the output of the 6CB6 are two LC circuits that can be switched and tuned for maximum output on 160 and on 40.

I scoped the RF input to the 6CB6 and found it was about 10 volts RF. That's when that little light went off. What if I took the 6AU6 and all its associated components out of the box and in its place I put the new DDS VFO. And, instead of using the LT1253 output to try and drive the Globe King directly, suppose I fed it to the 6CB6. Would I get my 25 volts of signal out? If so, I would have a VFO that produced the same degree of signal as the original 755, but which was 10,000 percent more stable. Sounded like a win-win situation to me.

So, I did exactly that. I replaced the tube-type, analog VFO with a solid-state DDS VFO and left the rest of the system alone. How did it work out? Like a charm. Electronically, it did everything I wanted it to do. And, cosmetically, I was able to use the Globe 755 enclosure modified for the LCD readout in place of the old rotating dial pointer above the paper frequency scales. I added new holes and switches for spotting, A/B VFO selection, switching the 160/40 circuits on the output of the 6CB6, and for manually turning on the VFO's output (e.g. "tune" function).

The photo shows the result. I had hoped to find my old sheet of Datak dry-transfer lettering to label it up good and proper...but it was gone, and so was Datak! Instead I used my YF's label machine. It's not as nice, but it works. More important, so does the new system composed of something new and something old.





## Behavior Modification

I really enjoy playing with boat anchor gear, but...I have always been reluctant to use them on high-band HF CW. Now, with a stable VFO whose stability rivals crystal control, I plan to be very QRV on ALL HF bands, on CW, using the Globe King/75A-4 station. So, thank you, Joe, for designing a great VFO and making the board available at a very reasonable cost. I look forward to working you, all, using my small-refrigerator-sized TX and relatively large RX in the very near future. Oh...please forgive my sending. I use an old Vibroplex keyer paddle and a tube-type keyer (Eico). It has no buffering or character completion functions, so it takes getting used to. Hopefully by the time I work you, I'll have gotten used to it, again.

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## Current Nominees

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Need Sponsors	<b>EA2AJB</b>	Andres Jovan Rivero
Need Sponsors	<b>N7KM</b>	Ken Munford
Need Sponsors	<b>VE3RIA</b>	Drew Best
Need Sponsors	<b>W7KXB</b>	Bill Harris
Need Sponsors	<b>WA9TZE</b>	Jim Akre

For more details about nominees and status, check the “members only” on the Website:

[www.cwops.org](http://www.cwops.org)

For information about joining CWops, check the Website under “membership.”